INFORMATION SHEET

Lawrence Livermore National Security, LLC, and the U.S. Department of Energy (hereafter jointly referred to as Discharger) operate a test facility known as the Lawrence Livermore National Laboratory Experimental Test Site (Site 300). Site 300 occupies 10.4 square miles in the Altamont Hills, approximately 6.5 miles southwest of downtown Tracy and 12 miles southeast of Livermore. The site consists of steep hills and narrow ravines with elevations that range from 500 to 1750 feet above mean sea level. The United States Government owns the property.

Waste Discharge Requirements (WDR) Order No. 96-248, adopted by the Regional Water Board on 20 September 1996, prescribed requirements for:

a. The discharge of domestic and mechanical equipment wastewater to sewage evaporation and percolation ponds (collectively referred to as sewage ponds).
b. The discharge of mechanical equipment wastewater to percolation pits.
c. Discharges to Class II surface impoundments that were used for disposal of explosives processing wastewater and photographic rinse water.

The Discharger submitted a Report of Waste Discharge (RWD), dated 19 July 2000, to amend WDR Order No. 96-248 to include:

a. Discharges to the sewage ponds.
b. Mechanical equipment wastewater to percolation pits.
c. Cooling tower blowdown and discharges associated with cooling tower maintenance to percolation pits.
d. Domestic and mechanical equipment wastewater discharges to septic tanks, leach fields, cesspools.
e. Low threat discharges to ground: primarily low volumes of drinking water, condensates and uncontaminated contained rainwater that are detailed in Attachment 4.

All of the discharges that will be regulated by this new Order, locations of which are shown on Attachment 2, are existing discharges that have been regulated in the past under other orders or waivers of Waste Discharge Requirements. The issuance of this Order provides the Regional Water Board with a better tool to control the discharges and evaluate potential impacts to water quality.

Surface water drainage is to Corral Hollow Creek, an ephemeral stream that drains east toward the San Joaquin Basin. Surface water runoff at the site occurs only after heavy rains. None of the discharges covered by this Order enter surface water drainage courses.

Depth to groundwater varies across the site. Depth to groundwater below the sewage ponds ranges from 10 feet below to even with the base of the sewage

ponds. Below the percolation pits groundwater is 30 to 130 feet below ground surface (bgs). Only the percolation pit at Building 812 overlies groundwater shallower than 65 feet bgs. Below the septic systems depth to groundwater ranges from less than 30 feet to 240 bgs.

Sewage Evaporation and Percolation Ponds

A lined sewage evaporation pond located on the southeast boundary of the site in the General Services Area receives sanitary and mechanical equipment wastewater. The evaporation pond discharges to a percolation pond during periods of heavy rainfall. The Discharger estimates that between 3.4 and 5.1 inches of rain over the rainy season is required to produce discharge to the percolation pond when operated with two feet of freeboard.

Because depth to groundwater ranges between zero and 10 feet below the sewage ponds, discharge to the percolation pond has the potential to contaminate groundwater. This Order removes the freeboard requirement for the sewage evaporation pond to allow the Discharger to better manage the evaporation pond to reduce the frequency of discharge into the percolation pond. Prior to discharging under WDR Order No. 96-248, the Discharger operated under WDR Order No. 85-188, which had no freeboard requirements. Prior to 1995, the Discharger maintained a one-foot freeboard without incidence of structural damage or wave action washing over the berm. When operated with one foot of freeboard, there was no discharge to the percolation pond. The Discharger designed the sewage evaporation and percolation ponds to hold the maximum potential discharge plus influx from a 100-year storm event.

This Order requires monitoring of the sewage ponds and groundwater as follows:

- The influent to the sewage ponds must be monitored semi-annually for specific conductance (SC), pH, and biochemical oxygen demand (BOD).

- The wastewater in the sewage pond must be monitored semi-annually for SC, pH, and dissolved oxygen and observed monthly for freeboard, color, odor, and levee condition.

- If the sewage evaporation pond discharges to the percolation pond, the discharge shall be sampled for BOD, SC, total and fecal coliform, and pH.

- The groundwater upgradient, crossgradient and downgradient of the sewage ponds must be monitored for SC, pH, nitrate, chloride, sulfate, sodium, total dissolved solids (TDS), total and fecal coliform, and ground water elevation.

Mechanical Equipment and Cooling Tower Discharge Percolation Pits

Five percolation pits receive mechanical equipment wastewater from Buildings 806A, 827A, 827C, 827D, and 827E, which are in the High Explosives Process Area in the southeast area of the site. Depth to groundwater varies from 70 to 130 feet bgs.

Seven percolation pits receive cooling tower effluent from blowdown and cooling tower maintenance discharges. Four percolation pits are in the High Explosives Process Area in the general area of the mechanical equipment wastewater percolation pits. The other three percolation pits are located at Buildings 801 and 812 along the Elk Creek Ravine, and Building 851 in the Western Firing Area. Groundwater is more than 120 feet bgs at Building 801 and Building 851 and about 30 feet bgs at Building 812.

Mechanical equipment and cooling tower discharges contain levels of some constituents in the wastewater that exceed water quality goals. The Discharger performed the Designated Level Methodology (DLM) analysis to evaluate the potential for the wastewater to impact groundwater beneficial uses. The evaluation showed that none of the constituents should impact beneficial uses of groundwater; however, an attenuation factor was applied to salts which the Regional Water Board has determined do not attenuate. The salts measured as specific conductance, chloride, sodium, sulfate and TDS are above water quality objectives in some of the cooling tower and mechanical equipment wastewater discharges

This Order requires the Discharger to submit a work plan to further characterize effluent to the percolation pits and to evaluate the potential for salts in the mechanical equipment and cooling tower effluent to degrade groundwater. If the Discharger determines that the salts in the effluent have the potential to degrade groundwater, the Discharger is required to submit a work plan to install groundwater monitoring wells to determine if groundwater quality is being negatively impacted. If groundwater monitoring confirms degradation of water quality by percolation pit discharges, the Discharger must submit a feasibility study proposing remedial alternatives to restore the groundwater quality. The Discharger must include a proposal for implementing a source control program and Best Practicable Technologies (BPT) to reduce pollutants in the discharge.

Septic Systems

Thirty-three (33) facilities, which are remotely located throughout the site, have septic systems. These septic systems are located at Buildings 801, 802, 805, 806, 807, 809, 810, 812, 813, 817, 818, 819, 825, 826, 827, 830, 832, 833/835, 834, 836, 841, 848, 850, 851, 854, 855, 858, 865, 882, 892, 895, 897, and 899.

Domestic waste is discharged to all of the septic systems. Domestic waste includes discharges of sanitary wastes from restroom and shower facilities, washing machines, kitchens, and housekeeping activities. Cooling tower and mechanical equipment wastewater is discharged to 12 septic systems at Buildings 801, 802, 805, 813, 819, 825, 826, 830, 833/835, 834A, 850, and 851. Mechanical equipment wastewater may include discharges from boilers, vacuum pumps, pressure relief valves on hot water/steam equipment, humidifiers, filter drains, and water softeners, as well as condensates from air compressors, air conditioners, and refrigeration units. Washing machines discharge to the septic systems at Buildings 813 and 835.

Mechanical equipment, cooling tower, and washing machine wastewater discharged to the septic systems contain levels of constituents in the wastewater that exceed water quality goals. The Discharger performed the Designated Level Methodology (DLM) analysis to evaluate the potential for these wastewaters to impact groundwater beneficial uses. The evaluation showed that none of the constituents associated with mechanical equipment or cooling towers should impact beneficial uses of groundwater. Since an attenuation factor was applied to salts and the Regional Water Board has determined that salts do not attenuate as they move through the soils, the Discharger must re-evaluate the potential for discharges of these salts to degrade groundwater. The salts measured as SC, chloride, sodium, sulfate and TDS are above water quality objectives in some of the cooling tower and mechanical equipment wastewater discharges. If the Discharger determines that salts are degrading or have the potential to degrade groundwater, the Regional Water Board will request that the Discharger propose BPT for reducing salt concentrations in discharges and if necessary propose remedial alternatives for restoring water quality.

The DLM analysis of washing machine, mechanical equipment and cooling tower wastewater shows that iron and aluminum from the washing machine at Building 835 have the potential to impact ground water. Only the washing machine at Building 813 washes High Explosives Process Area workers' clothes. The effluent from this washing machine contains the explosive RDX above water quality objectives and HMX above the detection limit. No monitoring wells are downgradient of the septic systems which receive the washing machine discharge. Domestic wastewater discharged to septic systems has the potential to impact groundwater beneficial uses with fecal coliform and nitrate**.** This Order requires the Discharger to evaluate which septic systems have the potential to impact groundwater and to propose monitoring for those septic systems which have the potential to threaten beneficial uses of groundwater.

This Order requires the Discharger to monitor groundwater for nitrate as $NO_{3,}$ total and fecal coliform, and ground water elevation upgradient and downgradient of four septic systems which service Buildings 812, 834, 850, and 899.

Groundwater monitoring of wells near these septic systems has shown evidence of elevated nitrate concentrations that cannot be explained by CERCLA sources.

Low Threat Discharges

The discharger conducts a variety of activities at Site 300 that may result in low volume and low-threat discharges. Consistent with the Storm Water Pollution Prevention Program, the discharger has implemented Best Management Practices (BMPs) to prevent these discharges from reaching surface water drainage courses, thus these discharges percolate into the ground. The discharges detailed in Attachment 4, are primarily composed of potable water, low conductivity water, condensate, and uncontaminated contained rainwater. These discharges may occur at any of the facilities and outdoor areas at Site 300.

The Discharger evaluated the low threat discharges in a technical report submitted in 1994. These discharges did not contain any constituents that would negatively affect groundwater and are discharged in very low volumes. The discharge quality and quantity have not changed significantly since 1994 and therefore are continued to be considered as low threat.

Reporting Requirements

The Discharger is to submit to the Regional Water Board semi-annual and annual monitoring reports as required in MRP No. R5-2008-XXXX.